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THE ENTOMOLOGICAL CLUB OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

*(Continued from page 61.)*

Friday Evening, January 2, 1903.

The Entomological Club of the A. A. A. S. was called together for its second regular session on Friday evening at 7.30 o'clock, in the Columbia Law School, with the President, Mr. Schwarz, in the chair, and the following members present: Messrs. Althouse, Barber, Bradley, Burke, Currie, Hines, Hopkins, Mann, Marlatt, Herbert Osborn, Osburn, Quaintance, Webb. The minutes of the last meeting were read and approved. The President called on Mr. Marlatt for some entomological notes, and the latter responded by giving an account of an entomological collecting trip on a tour of investigation made in the interior of China, west of Shanghai, on a house-boat, in the late autumn of 1901.

## A HOUSE-BOAT COLLECTING TRIP IN CHINA.

BY C. L. MARLATT.

Mr. President, I can give you some account of conditions in China, partly entomological. This is an informal meeting, with no set programme, and what I shall present will not necessarily relate to insects. I had some very interesting experiences in China, and perhaps the most interesting of these was a trip that I made on a house-boat into the interior from Shanghai. I have alluded to this trip on one or two earlier occasions without having gone at all into detail. The trip was an entomological exploration, but the entomological features were not very rich.

The region explored in this trip is the flat country lying between the Yang-tse river and the Bay of Hangchow and the great interior lake, Ta-Hu. It included a trip up the Whang-Poo river, on which Shanghai is situated, to its head waters, where it is continued in the considerable canal, passing several Chinese cities of some importance until the Grand Canal is reached at Ka-Shing. From this point the Grand Canal was followed as far as Samen, and then a detour was made through smaller interior canals to Haining, a considerable town tributary and in sight of Hang-

chow. The return trip was made over substantially the same route. All of the territory explored lies in the upper half of the province of Che-Kiang.

The Boxer troubles were all confined to three northern provinces about Peking. The region which I explored in this house-boat trip was not in the range of the Boxer difficulty, nevertheless the Chinese everywhere were more or less savage over the results of the foreign invasions—rightly so, I think—and while in the central and southern provinces they were not openly hostile, they were not exactly kindly disposed toward the foreigner.

While in Japan I had made the acquaintance of some very charming people who reside in Shanghai, and who promised me that when I came to Shanghai they would give me a house-boat trip into the interior. At the conclusion of my investigation in North China, the opportunity came for this house-boat trip, but the gentleman who was to accompany me, Mr. Rainer, was just starting for Europe. Nevertheless, he turned his house-boat over to me, and a very comfortable boat it was, and stocked it with all sorts of provisions, and employed for me a crew of seven Chinamen, including a "Laodah" or captain who spoke a little English, the balance of the crew being coolies who spoke no English at all. In company with Mrs. Marlatt, I started out late one night from the city of Shanghai, my little house-boat being attached to a row of seven or eight Chinese boats, like a train of cars, all towed by a little steam tug. We were thus taken up the river and into the interior canal system.

It may be said that much of Eastern China is a flat country, raised above the level of the sea only a few feet, and all this area is broken up by innumerable canals, which take the place of roads. The Grand Canal of China runs from Hangchow for hundreds of miles northward, crossing the great Yang-tse and Yellow rivers, until it finally reaches Peking. It is an enormous canal, running, so far as I know, its entire length without locks, on a uniform level. We cannot imagine such a condition anywhere else in the world except in China; nowhere else could a canal be run for such a length and across the great rivers on the water level as this and others do in China.

The morning after our start found us in this network of canals, abandoned by our companion boats and little steam tug, and making the slow progress possible with a single stern oar. We passed many Chinese towns and villages, and finally struck the Grand Canal, which we followed

for a considerable distance, to leave it again for a long country detour, which finally brought us to the town of Haining. This is just below and in sight of the great town of Hangchow, situated at the southern terminus of the Grand Canal. Some of the branch or interior canals are large and important, or perhaps streams widened and straightened; others are narrow, and some of them mere ditches, scarcely large enough for the boat to go through, and with numerous stone bridges which offered serious obstacles to our progress.

You can easily imagine that a trip of this sort was very interesting. It afforded wonderfully good opportunities to gain an acquaintance with the whole interior flat country of this portion of China. It was possible any time to leave the boat and get out and walk along the side of the canal. As stated, the boat was propelled, after the first night, merely by the single oar at the stern, "eulowing" it is called, and the speed was about that of a slow walk, so there was plenty of opportunity to take runs across country, see the nature of the vegetation and the system of cultivation, to study the orchards and house yards, and to make collections, and this I was doing all the time at great risk of being bitten by Chinese dogs, which share their owners' antipathy to the "foreign white devil."

The portion of China explored in this way is about the equivalent in latitude with northern Florida and southern Georgia, and is the northern limit of the citrus region. Immediately back of Shanghai the peach is the important fruit crop; in fact, this is the great peach region of China. I examined a great many of these orchards and went into a great many house yards, always being threatened viciously by dogs, and stared at with coldness, if not savagely, by the Chinese. Very rarely did I find a Chinaman who was at all pleasant in his demeanor, quite the opposite in this respect of the conditions in Japan. Collections of scale insects were made through this region, but they were very rare. The whole region is excessively moist and hot in summer, resulting in very general fungous attack, so that, with the exception of one or two species, wherever I found any scale insects they were simply the remains of small colonies killed by fungus. There was scarcely a living scale insect to be found at this season of the year—late October.

The citrus fruits, which began to appear at Haining, were examined for scale insects, and here and at some near-by towns and villages a few citrus scale insects were collected. A few species also were found on the mulberry. The country traversed is a great silk, cotton and rice produc-

ing region. Cotton is more abundantly grown immediately west of the city of Shanghai, and rice in the back country. The tea districts are still further westward in the hill country. Another great tea region lies back of Hong Kong.

The scale insects found on the citrus trees were mostly common species, now cosmopolitan, such as the *Parlatoria ziziphi* and *Pergandei*, and the two *Mytilaspis* species, *M. Gloveri* and *M. citricola*. All of these were very rare, usually but one or two examples being found.

In regard to the climate of the region described, it may be said to be characterized by excessive moisture from the early spring to past mid-summer, accompanied with very high temperature during July and August, 100° F. for several days not being uncommon. In autumn the prevailing conditions are bright days and dry weather, and the winter temperature may fall to 12° F. or lower. Scale insects, as noted, are killed out, with the exception of a few species, by this excessive moisture and high temperature.

The region to the north, extending to the mountains above Peking and connecting with the great Gobi desert, is much drier, the rains all coming in the spring and early summer, and a long period of six or seven months following, from September to February or March, with no rain, every day bright, sunny and dry, except for occasional dust storms from the desert. In this northern region it is very cold in winter.

The only scale insect which seems to thrive in central China, from Shanghai westward to the Grand Canal, is one of the *Ceroplastes*, probably *Ceroplastes rubens*. This species of wax scale occurs all through this region, and is especially abundant on the holly, sometimes absolutely covering this plant, leaf and branch. It occurs scatteringily also on many other plants. Climatic conditions do not check this scale insect, which is kept down somewhat, however, by predaceous ladybirds, especially the *Chilocorus similis*, which was always with it in numbers and feeds on the larval scales.

Other insect damage was very little in evidence. Not being a specialist in Coleoptera, I was not fitted to make collections of injurious beetles, but in going through the mulberry groves, peach orchards, etc., there certainly was no evidence of serious insect damage. In other words, I did not see any evidence of the work of borers in mulberry or peach. In the case of the mulberry the trees were wonderfully healthy, covered with an enormous crop of the second growth of leaves. The Chinese at the time of my trip

—in October—were busily stripping the trees of these leaves, and carrying them away in great baskets, to be used as winter forage—all of the second crop of leaves being made use of in that way.

Wherever I went there was ample evidence of the importance of the silk industry. In the little hamlets and farmhouses that I entered I frequently found the fittings for silkworm rearing. At this season the old baskets—great, flat, narrow-rimmed ones—in which the silkworms are fed in May and June, were being used to dry the late crop of cotton bolls. One frequently saw rows of these baskets in the house yards overspread with a small lot of bolls exposed to the sun to hasten their opening.

The mulberry is grown in little orchards or narrow groves lining the banks of the canals and irrigating ditches. The trees have the appearance of osier-willow stumps from the habit of the natives of cutting off all the shoots close to the stump during the feeding season, in May and June. These shoots are either stripped at once of their leaves, or are made up into bundles and taken home to be stripped afterwards. A traveller going through this same region in midsummer has noted that all the mulberries have a wintry appearance, or resemble a collection of dead stumps, but the rains which fall copiously during June and July, and the natural fertility of the soil, which is increased by cultivation and fertilizing immediately after the branches are removed, soon bring out a succulent new growth, developing a second and enormous crop of leaves, the same, in fact, which were being gathered at the season of the year of my visit. The traveller referred to above, Mr. Fortune, says that the worms are fed in the numerous little farm cottages, commonly in dark rooms fitted up with shelves placed one above another from the ground to the roof of the house. The worms are kept in the big bamboo sieves or baskets already described, evidently exactly after the manner which I had observed in Japan. The silk products of this district are considered among the finest of China, and the output must be very considerable. Those interested in the culture of the silkworm from the native Chinese standpoint, should see the little translation made by a missionary of an old Chinese work on the subject, which recently came into the possession of the Department of Agriculture.

The country penetrated is practically without forest areas. The main cultures, as stated, are rice and cotton, with the mulberry growing in little orchard strips along the banks of the canals. Usually at each farmhouse there would be a few trees—peach, plum, etc. The common shade trees are the weeping willow, occurring scatteringly along the canals, a species

of elm, and the maiden-hair tree, with occasional small clumps of bamboo, usually as yard plants, or in the cemeteries of the rich, where also may occur a few pines and the *Cryptomeria japonica*. There is little, therefore, to give a forest clothing to the country, but if one climbs any of the many-storied pagodas which occurred from time to time and takes a look over the country, the abundance of the mulberry as seen in profile and the few trees noted about the hamlets and cemeteries makes the country look fairly well forested.

This region, as stated at the outset, had not been reached by the Boxer movement, and we felt perfectly safe in going about alone and with no knowledge of the language. We took all our provisions with us, and were not dependent on the Chinese for anything, except some birds or game which our "Laodah" got for us.

This trip through the interior offered opportunities to study other forms of insects, especially mosquitoes. I collected at Haining some very interesting mosquitoes, including a rare species of *Anopheles* (*A. Sinensis vanus*), as determined by Mr. Coquillett. The nights were spent on the canal in the boat, and we were bitten a good many times by these *Anopheles*. They were very difficult fellows to catch; in other words, the boat was open, and they would fly out before morning, but I managed to get a number of specimens. Mosquitoes, however, instead of being abundant, as one would have supposed in an open country devoted to rice culture and under water much of the year, and intersected with canals, which are permanent waterways, were very little in evidence, and, in point of fact, except at Haining, we were not troubled by them at all.

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MANN : Did you find anybody who knew anything about entomology?

MARLATT : There is in Shanghai a Mr. A. Arthur, an Englishman, formerly connected with the Kew Gardens, and now in charge of the Botanical Garden, and of all the street reservations and cemeteries, etc., belonging to the European portion of Shanghai. He knew a little as a gardener would about insects.

MANN : No native entomologists?

MARLATT : No native entomologists. A missionary, Dr. Barchet, who acts as interpreter for the American Legation, and lives near Shanghai, is an amateur botanist of some note, and has collected and studied the plants of this region for twenty-five years in connection with a German botanist, Dr. Faber, who is to be credited with much of our knowledge of

Chinese botany. A good many of the plants in the Kew Gardens were obtained through these two men, especially Dr. Faber. Some years since, Dr. Faber, who was also a missionary, went into the interior of China and took his plants with him, and died there, and his collection is supposed to have been lost. Dr. Barchet has a duplicate, in part, of the Faber collection, and I went through it, especially the Rosaceæ, and examined the wild cherry, apple, pear, *Crataegus*, etc., which had been collected in the hill country further inland than I had reached, with the hope of finding some insects on the herbarium specimens, and also to get some knowledge of these wild fruits. But of entomological workers there are none in Shanghai.

Foreign collectors have done a great deal of work in China, notably a wealthy Englishman, the late Dr. John Henry Leech, who spent several years collecting Lepidoptera in China, and was for a time the owner of "The Entomologist." Much of the results is included in his "Butterflies from China, Japan, and Corea," a sumptuous 3-vol. work. I met, oddly enough, in going from Shanghai southward, a brother of Mr. Leech, who, however, has no special interest in entomology, but is an attaché of the British Legation in Rome, and was taking a vacation trip around the world.

While there has been a good deal of insect collecting in China, the greater portion of the country is absolutely unexplored entomologically. Very few foreigners have ever gone through the interior provinces, and in some of these the inhabitants are savage and unfriendly. In the vicinity of all the trading towns there has been some collecting, but the interior region is practically unexplored by scientists—that is, by collectors of plants or insects. Plants have been studied, and especially the horticultural sorts, more than insects, and explorers were sent out by the Horticultural Society of England early in the last century to secure new and rare plants for the English Gardens, and especially the Kew Gardens. A Mr. Fortune, already mentioned, was sent out in this way, and spent three years in China, between 1842 and 1845, and sent home shiploads of plants, including plums, peaches, mulberries, etc. His explorations were very limited, although reading them they seemed to cover a good deal of ground; but when one comes to examine his itinerary, Fortune in his three years saw but little more of the country than I did, although, of course, much more minutely. His longest trip into the interior was practically a duplicate of the one I have just described, and he made a few explorations along the coast region as far north as Peking.

I have limited my story to the house-boat trip, and cannot take time to describe the horticultural and agricultural conditions of North China, which, in fact, I have briefly discussed elsewhere.

QUAINTANCE: I should like to ask Mr. Marlatt if anything is being done in entomology in China at all; if there are any Chinese entomologists or collectors in China that he knows of. What is the status of the science in China?

MARLATT: I know very little about that matter from the Chinese side. It is very difficult to get at Chinese knowledge or practices except by long residence there. Undoubtedly the Chinese horticulturists do something for the control of various insect pests. As a rule, however, their interest in insects is chiefly from the standpoint of medicine, and most insects are considered useful in the control of disease, their ideas being the reverse of views now obtaining in this country, where insects are now known to often be the transmitters of disease. If the old saying be true, however, that "the hair of the dog cures the bite," the Chinese have plausible grounds for their beliefs that insects will cure disease!

The curious packages of May-beetle larvae with fungus growing out of them, illustrations of which most of you have seen, come from this region and the provinces of the Upper Yang-tse. This fungus, *Corydyceps Chinensis*, is much esteemed as medicine, and is described and figured in Vol. IV., *Insect Life*, p. 217.

Whenever I was seen collecting insects by Chinamen, they immediately supposed I was getting the insects for medicine; that seemed to be the common idea among Chinese everywhere, and they immediately wanted to know what I was going to use them for, and undoubtedly I could have started the use of insects for any variety of purposes in the way of "cure-alls" if I had felt so inclined. The Chinese have a large nomenclature of insects—that is, they have names for all the common species of insects—and they have treatises relating to the culture of the silkworm, but I have never seen any treatise relating to insects other than the silkworm.

HOPKINS: Mr. President, I might say in my own exploration, not of China, but of Chinatown, San Francisco, I was very much interested in the kinds of insects they used for medicine. I noted especially a very large pupa shell of a Cicada, quite a large bottle full of them. I think they used them as an antidote for rheumatism, or something of that kind. I saw

them mixing up a dose for an individual who came into the drug store—or whatever they called the place where they had this medicine—and the druggist took down different bottles of all sorts of things, and spread out a paper on the counter and laid out a handful of one thing after another, until he had about half a gallon of all sorts of mixtures, which he bottled up, and the Chinaman put it under his arm and went off.

SCHWARZ: Gentlemen, I suppose you are all familiar with the fact that the Chinese not only use insects for medicine, but they also use them as an article of trade. I think Mr. Mann and many of us must have seen those collections of insects which the Chinese have offered for sale to the Europeans who visit Hong Kong and other ports. I have seen several of these sets, always arranged in the same manner and including the same species. The insects are pinned on old English needles and arranged in an artistic figure in a glass-covered box, opening from beneath.

QUAINTANCE: Have insects any real medicinal value?

SCHWARZ: Well, if you believe in a thing, it will help you, certainly.

SCHWARZ: Hong Kong is, of course, one of the best known points in regard to entomology, because for many years it has been an English settlement. In regard to Shanghai and the country back of it, the French missionaries have especially taken pains to collect insects as best they could.

MARLATT: You remind me of something that I had forgotten, in your remarks, Mr. President, namely, that I visited this French missionary establishment situated back of Shanghai, where for many years a certain priest, I think the Rev. Hué, has studied and collected insects. I went out especially to see him, and had forgotten the event until you reminded me of it. This considerable French mission lies several miles out of Shanghai, and with its big buildings is a very comfortable place, and possesses a large museum, in which are specimens kept as we keep them in our museums, of all sorts of birds and animals of the country, and a considerable collection of insects. The collection of insects was in a number of boxes, but in rather bad condition, and I was informed that the old priest who had been responsible for the museum and its collections was on his deathbed. I did not see him, therefore, but I did examine his collection, and it showed great industry and enthusiasm on his part, in that out-of-the-way corner of the world. His collections were, however, in such a condition that they could not survive very long.

(To be continued.)

## LARVAL CHARACTERS OF PACHYGASTRIA TRIFOLII AND AGLIA TAU.

BY HARRISON G. DYAR, WASHINGTON, D. C.

I have postponed replying to Mr. Bacot's communication (CAN. ENT., XXXV., 44-47) until I could examine his preparations. He has kindly sent them to me, and they seem definitely to settle the two points that remain at issue. The *Aglia tau* is in fluid, and shows a number of secondary setæ as described by Mr. Bacot. These setæ are short and unusually weak, so that in my own specimen, which is dried, inflated, they had become partly shrivelled, partly broken in transit. I do not think, after examining Mr. Bacot's specimen, that they can be regarded otherwise than as true setæ, and I am very willing to acknowledge myself corrected. This correction, if applied to my synoptic table of Saturnian genera (Tutt, Brit. Lep., III., 272), makes my divisions stronger and sharper than before, allying *Aglia* more strongly than ever with *Attacus* and *Saturnia*.

The *Pachygastria trifolii*, in stage I., was new to me, but it shows the normal structure exactly as I had anticipated. Tuber cle v, which Mr.

Bacot professes himself unable to find any trace of, "single haired or otherwise," is present in the normal position below and before iv (see figure 1). It is small and single haired, but I see it distinctly on several segments of the best-preserved larva (in balsam on a slide). The general wart pattern corresponds with *Mala-cosoma*, but the warts are more nearly equal, ii, iii and iv not being reduced; vi is double, the halves well separated and distinct, while the secondary warts at the anterior margins of the segments are well developed. I do not anticipate that any Lachneid will be found with tubercles iv and v united. That condition is uncharacteristic for the Bombycid phylum, though it obtains commonly in the

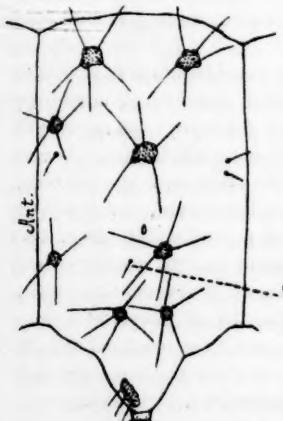


FIG. 1.

Tineid lines. On this ground I would criticise Mr. Bacot's citation of *Anthrocera* and *Marasmarcha* (CAN. ENT., XXXV., 45), which are

Tineid genera, as analogies for the probable structure of *Pachygastra*, a Bombycid genus, although the matter is not of importance, since the actual structure of *Pachygastra* has no need of interpretation by analogy.

#### NOTES ON COLEOPTERA.

BY CHARLES STEVENSON, MONTREAL.

Two good captures in the order Coleoptera were made by the young collectors of Montreal last season. One was a single specimen of the ground beetle, *Calosoma Willcoxi*, Lec., by A. Denny, on the 26th of July, when collecting under stones and leaves on the northern slopes of Mount Royal. The other was a lamellicorn beetle, *Odontaeus obesus*, Lec., three specimens of which were found in a large bottle full of insects caught by my son, Kenneth R. Stevenson, at the nearest light to his home, on the evening of the 30th of August.

Through the kindness of Mr. B. Tomlin, B. A., F. E. S., Chester, England, I am in possession of four specimens of *Cassida viridis*, Linn., caught by him near Cardiff, Glamorganshire, and I can find no difference between them and specimens of the Tortoise beetle caught at Levis, Que., last season and identified by Rev. Dr. T. W. Fyles as such.

#### ENTOMOLOGICAL BRANCH OF THE OTTAWA FIELD NATURALISTS' CLUB.

The members of this section of the Club are endeavoring to create a more active interest in the study of entomology by holding fortnightly meetings, at the residences of the members, for the exhibition of specimens, discussion thereon, and the presentation of brief papers. The movement has so far proved most satisfactory, and the benefit of it has been felt by every individual, in reviving and quickening their love for the subject, and in affording opportunity for solving of problems which every collector meets with in examining insects which he has not specially studied. Three meetings have already been held; the first at the residence of Dr. Fletcher, who was the principal mover in organizing the meetings; the second at Mr. Harrington's, and the third at Mr. Hulgett's. They were all most enjoyable and instructive, and the two hours allotted to each were fully occupied, and the discussions and exhibits will undoubtedly bear fruit in improved work in future by the members. They also look forward to more systematic collecting in the approaching season, and to the holding of more frequent sub-excursions.

W. H. H. (Secretary).

## LEPIDOSAPHES VERSUS MYTILASPIS.

BY MRS. C. H. FERNALD, AMHERST, MASS.

The genus *Lepidosaphes* was established by Dr. Shimer, in the Transactions of the American Entomological Society, Vol. I., p. 372, Jan., 1868, with one species (*conchiformis* = *ulmi*, Linn., 1758). Although the generic description is not all that could be desired, it is certainly more satisfactory than the descriptions of many genera of insects in this and other orders which have been accepted without question.

The generic name *Mytilaspis* was first published, without a word of description, by Signoret, in his Catalogue of the Coccidae in the *Annales de la Societe Entomologique de France* (4), Vol. VIII., p. 841 (1868). This paper was presented to the Society at the Seance of March 25th, but was not published till later in the year. A description of this genus was given by Signoret in the above-named work for 1870, page 91. This article was presented to the Society at the same time as the catalogue.

The genus *Mytilaspis* was evidently first proposed by Targioni-Tozzetti, in his *Coccidarium Catalogus*, which was published in the *Atti della Societa Italiana di Scienze Naturali*, Vol. XI., the title page of which bears the date of 1868, but the volume was published in four parts, and the paper covers of these parts bear the following dates: Part I., June, 1868; Part II., October, 1868; Part III., February, 1869; Part IV., April, 1869. Targioni's *Introduzione alla seconda Memoria per gli studj sulle Cocciniglie* and his *Coccidarium Catalogus* were both published in the third part of this work, and these papers should therefore date from 1869 rather than from 1868, the date usually given them.

In his *Cocciniglie degli Agrumi in Italia*, p. 22 (1891), Targioni gives the characters of *Mytilaspis*, and refers to his *Studi sulle Cocciniglie* (1867) and also to the above-named works. The name *Mytilaspis*, however, does not occur in his *Studi*, and therefore was not published by Targioni earlier than February, 1869.

Signoret speaks of having received Targioni's Catalogue in *Ann. Soc. Ent. Fr.* (4), Vol. IX., p. 113 (1869), but as it was not published at that time, we must conclude that he received a manuscript copy.

Under the circumstances it seems proper to use the generic name *Lepidosaphes* as Kirkaldy has done in his late paper on the Coccidae in *Fauna Hawaiana*, although, of course, we are sorry to give up the familiar name *Mytilaspis*.

## NEW HISTORIES IN PAPAIPEMA (HYDRŒCIA).

BY HENRY BIRD, RYE, N. Y.

(Continued from Vol. XXXIV., p. 118.)

There are certain species here and there among our moths which are possessed of a sort of will-o'-the-wisp evasiveness, and one would as soon think of encountering them in nature as of finding the mythical pot of gold at the rainbow's end. The causes that bring about such conditions are, of course, varied, and these species often stand represented by some unique type in a distant collection. That the British Museum has long taken first rank in sheltering many of these uniques goes without saying, hence the matter of a rediscovery becomes of more than ordinary moment. Further, an additional satisfaction arises, if at a second meeting with the recluse the early history is exposed as well, and we find the way open to a more extended acquaintance, the while getting an insight into the specific standing, had that ever been questioned. So, in the rediscovery of that captivating Noctuid, *Papaipema (Hydrœcia) appassionata*, one of our most elusive moths has again come to light, and we have the added pleasure of perusing an interesting larval history. The species was described by Harvey years ago, coming from London, Ontario, and his single type in the British Museum has stood perhaps as the only positive representative. That it should come to light again at so distant a point, seems a little surprising, though other of its congeners are equally dispersed, and the insight into its life habit aids in the explanation. The food-plant, *Sarracenia*, though widely distributed, is native to such districts, and flourishes under such wild conditions that these moths, whose career runs through but a few days' duration, would be scarcely met with, and we may easily conceive of the rarity of the imago.

That the larva should have been encountered, stood more in the line of probabilities, since the quaint little pitcher plant has ever been a subject of interest to naturalists, and of late years especially has been receiving the attention of many entomologists. Already the plant has furnished details among Noctuid life-histories, those pleasing little *Exyria* larvæ having had their habits chronicled by Thaxter and Riley, while the current enthusiasm concerning mosquitoes and their developments has brought out the fact of a species whose young seem to be propagated in the waters of the pitchers exclusively. With such an amount of expert scrutiny directed to *Sarracenia*, we might have expected *appassionata* to have been met before, and this very fact augurs to the restricted and localized range that colonies of the species inhabit.

To Mr. Louis H. Joutel, the artist-naturalist, we are indebted for the important disclosure, some unknown *Papaipema* larvae found by him in the pine barrens of New Jersey ultimately proving this very desirable species. The discovery happened at an early stage, and when later it became assured that we were dealing with an unknown larva, a subsequent visit to the locality extended our acquaintance to a small but thriving colony.

A first visit to the pine barrens is fraught with many surprises, the extremely distinct flora and fauna of such a district being a never-failing source of enjoyment. One looks in vain for the usual thick-stemmed weeds in which our boring friends are wont to occur, but the soil conditions debar such a growth; in fact, one looking for them alone would soon give up in despair. The herbaceous plant life runs to all sorts of odd creations, with orchids and sundews and a host of bright flowering plants in a variety of forms that bring joy to the heart of the botanist. Strange noises are in the air, as large, unfamiliar Hymenoptera buzz past. Even the Cicada's note sounds queer, and the long-drawn, monotonous bur-r-r-r proves to be produced by an unfamiliar form. Only the mosquitoes, the untold hosts of mosquitoes, are thoroughly familiar, and even here very likely many distinctive species exist, though the ordinary mortal is more intent on the virtues of some repellent, rather than on the variety of species that may be feasting upon the exposed portions of his anatomy. So it is not strange, after all, that such a locality should produce some unlooked-for novelty.

When coming to hand the young larvae were apparently past second moult, the first pair of abdominal legs being still aborted, so that a slightly-looping position occurs when moving. It still on occasion would spin a silken thread when sliding from an insecure footing or upon a sufficient apprehension of a fall. Appearance is very similar to *purpurifascia*, and there exists a way of working that strongly recalls this species. There appeared only one difference: with *purpurifascia* the dorsal line is continuous, with our friend of the pitchers it is suppressed on joints four to eight. In the succeeding stage developments bespeak a greater individuality. We have the typical *Papaipema* larva, of exceedingly cylindrical build, the longitudinal stripes queerly broken at its middle. The colour is a good shade of sienna, somewhat livid, the dorsal and subdorsal lines pure white. The tubercles, thoracic and anal plates are all very pronounced and follow the usual positions. On joint ten

there is no development of the plate IVa, at the upper corner of the spiracle, as occurs with some other species. In the penultimate stage, conditions are similar, the salient features of comparative value being the absence of a continuous dorsal line and of IVa on joint ten. It is by these points separable from *purpurifascia*, which it so closely personifies at first glance. The large dorsal plates preceding the anal one are well divided by the dorsal line; in some other species these plates become confluent. At maturity the length is 39 mm.; head nearly 2 mm. wide. The colour does not fade to translucence entirely, but retains a distinct sienna shading. Pupation occurs about the first week in August. The chrysalis offers no distinguishing point. Being formed outside the burrow, there is not the extreme cylindrical shape caused by a narrow aperture. It is of a paler colour than usual, of slender proportions, very active, and measures 20-22 mm. The species seems rather a small one, though, given a larger food-plant, we might expect better developments. *Sarracenia* is an odd plant to have been selected by a boring larva of the size of the species under consideration. There being scarcely any stalk, the larva must needs use the root, and here the supply is rarely enough in one plant for attaining maturity. Workings do not extend to the pitchers in any way, for though one young larva was observed to enter the plant by the pitcher's tube, it is not likely this is the usual channel, since they so often contain more or less water. The little *Exyria* larvae can easily mount the pitcher's side and keep above any water as occasion requires. Indeed, it seems surprising that some insects are immune to these dangers, where so many others have fallen. The remains of quantities of entrapped insects are to be found in the pitcher's neck, being consumed by the acids there secreted. Here is sure to flourish the slug-like maggot of the *Sarcophaga* fly. A little further up an *Exyria* may have its abode. Down in the root *appassionata* may be seeking the seclusion which has stood it in such good stead for so long. An anomaly is surely presented: this insectivorous plant now harmless and furnishing food for those insects that have grown wise in their own and succeeding generations.

Though not having personally viewed Harvey's type, the determination of the *Sarracenia* species is due in a measure to courtesies extended. While the application of the description may be entirely satisfactory, and the aid of coloured drawings has appeared to settle any reasonable doubts, we must still bear in mind that species run very close in this genus at times, and a single example, as in the case of this particular type, does not

always convey all that the species really personifies. The pattern of *Papaipema* in a rather extended group of species is often so similar that a verbal differentiation is sometimes difficult, yet *appassionata* stands by itself in some details. The solid red terminal space, the bright yellow lower median field, and the large white spots in an apparently restricted median space, both in type and would-be duplicate, are a combination of features not occurring elsewhere in the same contrast, and offer a rather striking individuality when seen in the originals. Then, too, there is a Western form as yet awaiting a better familiarity, which it is expected will better cement the species. That larval developments upon a proper acquaintance offer such an aid in this genus is one of its satisfactory features, and with the widely-increasing interest that is at present developing, we may soon be assured of settling any doubtful questions.

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#### THE TOMB OF THOMAS SAY.

BY F. M. WEBSTER, URBANA, ILL.

Entomologists in general, and Americans in particular, are much interested in all that pertains to one who has justly become known as the father of American entomology.

As is generally known, the tomb containing the remains of this famous naturalist is on the grounds of the old MacLure home, in the city of New Harmony, Indiana.\* This has recently changed owners, and the old house in which Say died has been remodelled, the older portion having been torn down. This was made necessary by the crumbling of the walls, but the new owner, Mr. John Corbin, has only allowed this to be done where it became absolutely necessary. Fortunately, Mr. Corbin fully appreciates and reveres the historic old structure, and, as he stated recently to me, "has desecrated it just as little as possible."

In reply to my question as to his intentions relative to the tomb, Mr. Corbin assured me that so long as he lived and possessed the premises it should remain untouched, and the tone in which he spoke left no doubt as to his sincerity. The ground is in the centre of the city, and hence valuable, but Mr. Corbin will keep his word, as I am fully convinced, and it will be long years before any change is likely to occur that will affect the last resting place of the dead naturalist.

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\*See Entomological News, Vol. VI., Nos. 1-4, 1895.

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CLASSIFICATION OF THE FOSSORIAL, PREDACEOUS AND  
PARASITIC WASPS, OR THE SUPERFAMILY  
VESPOIDEA.

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(Paper No. 13.—Continued from Vol. XXXV., p. 44.)

FAMILY XL.—*Thynnidae*.

This family, although quite distinct, is closely allied to the two which follow—the *Myrmosidae* and the *Mutillidae*—and it will probably be difficult for the student to separate at once the wingless females from some in the families mentioned. Some authorities, having been unable to find good characters to separate these wasps, have classified all together as a single large family under the name *Mutillidae*; but I think incorrectly so.

The middle coxae are not contiguous, as in the *Mutillidae* and *Myrmosidae*, being separated, usually, by a triangular or bilobed projection of the mesosternum, while the thorax in the females is also quite distinct, being divided into *three* parts; in the *Myrmosidae* the thorax is divided into *two* parts only, while in the *Mutillidae* it is *undivided*, the pro-, meso- and meta-thorax being closely united, *without* distinct dividing sutures.

The males in the three families, to a certain extent, closely resemble one another, and are not so easily separated, although each family has a distinct *habitus* peculiarly its own, which one easily recognizes with practice, the shape of the head, the thorax and the abdomen being slightly different; the genitalia armature, however, with but few exceptions, is quite different in the three families.

Many genera have been proposed for these wasps, the majority of which I consider good, although Dr. von Dalla Torre, in his Catalogus Hymenopterorum, has placed most of them under the genus *Thynnus*, Fabr., causing much confusion. This arrangement throws a great many with the same specific name together, and for these he has proposed new specific names, which still further complicates matters, burdens our literature with names that will not hold, but which must be quoted, and making it exceedingly difficult to keep track of.

I find the date of Guérin's Paper on this group, published in Duprerry's *Voyage de la Coquille*, is given as 1830, whereas, although the title page is so dated, it did not appear until 1839; it also makes certain changes in synonymy necessary.

The family is very large and widely distributed, but is more extensively represented in South America, in Australia and Africa than elsewhere, Europe and North America having only a few representatives.

The study of the genera and species is most difficult on account of the great dissimilarity of the sexes, the slowness with which material comes in, and the absence of good collectors to take the sexes *in situ*, so that the sexes can be correctly correlated and the genera more thoroughly elaborated.

I have divided the family into three subfamilies, which may be recognized by the characters employed in the following table:

Table of Subfamilies.

Females . . . . .	1.
Males . . . . .	4.
1. Body rather short, not elongate: thorax above convex, the metathorax very short, obliquely truncate posteriorly, transversely compressed or sublamellar, more rarely long . . . . .	3.
Body elongate and slender; thorax above more or less flattened, rarely convex.	
Metathorax never very short, nor transversely compressed; abdomen smooth, the second dorsal segment <i>without</i> transverse folds or carinae, the pygidium and hypopygium normal. . . . .	2.
Metathorax very short, obliquely truncate posteriorly, from the base or very near the base, transversely compressed or sublamellar; abdomen not smooth, variously sculptured, the second dorsal segment more or less punctured, or rugulose, and usually <i>with</i> two or more transverse folds or carinae, sometimes many; pygidium and hypopygium abnormal, variously modified . . . . .	Subfamily I., Thynninæ.
2. Head transverse, much wider than long, the eyes large, the ocelli distinct. . . . .	Subfamily II., Methocinæ.
Head large, oblong, quadrate or nearly, more rarely subrotund or obtapezoidal, the eyes not large, the ocelli usually wanting . . . . .	Subfamily III., Rhagigasterinæ.
3. Metathorax short, usually obliquely truncate from its base; abdomen not wholly smooth, the second dorsal segment punctate or rugulose, and usually <i>with</i> two or more transverse folds or carinae, the pygidium and hypopygium abnormal, variously modified, the latter usually	

dilated into a broad margin at apex, or trumpet-shaped, the former often striate or coarsely sculptured ..... Subfamily I., *Thynninæ*.  
 Metathorax not very short; abdomen smooth, the second dorsal segment *without* transverse folds or carinæ, the pygidium and hypopygium normal, not modified in any way ..... Subfamily III., *Rhagigasterinæ*.

4. Hypopygium *armed* with one or more spines or teeth or trilobed. . . . . 5.  
 Hypopygium *unarmed*, at apex truncate or rounded. . . . . 9.

5. Thorax elongate; front wings *with* radial and cubital cells. . . . . 6.  
 Thorax rounded; front wings *without* radial and cubital cells. . . . . 9.

6. First transverse cubitus distinct, *with* an appendage. . . . . 7.  
 First transverse cubitus wanting, or if present, *without* an appendage. . . . . 8.

7. Mandibles bidentate. . . . . Subfamily I., *Thynninæ*.  
 Mandibles tridentate. . . . . Subfamily III., *Rhagigasterinæ*.

8. Hypopygium produced at apex into a long aculeus which curves upwards. . . . . Subfamily II., *Methocinæ*.  
 Hypopygium armed with a long aculeus which curves upwards, but that originates *before* the apex. . . . . Subfamily III., *Rhagigasterinæ*.

9. Mandibles bidentate. . . . . Subfamily I., *Thynninæ*.  
 Mandibles tridentate. . . . . Subfamily III., *Rhagigasterinæ*.

Subfamily I.—*Thynninæ*.

The males in this group show a wonderful difference in the structure of the mouth-parts and in their genitalia, which, in time, will enable the group to be divided into four or more tribes, namely, *Thynnini*, *Myrmecodiini*, *Scotaenini*, *Amblysomini*, etc.; but this had better not be done until more of the forms, in both sexes, are known.

Table of Genera.

Males. . . . .	1.
Females. . . . .	29.
1. Hypopygium <i>armed</i> , ending in a single triangular tooth or spine, or tridentate or trilobed; sometimes 5-dentate, a small tooth on each side at base in addition to the apical teeth; sometimes oblong, narrowed, tridentate, or trilobed at apex. . . . .	2.
Hypopygium <i>unarmed</i> , truncate or rounded at apex. . . . .	20.
2. Hypopygium at least tridentate or trilobed, sometimes 5-dentate. . . . .	3.
Hypopygium ending in a large triangular tooth or single spine, rarely with indications of a lobe at the basal angles of same, the lateral margins sometimes arcuate or rounded. . . . .	10.

3. Hypopygium 3-dentate, or trilobed ..... 6.  
 Hypopygium 5-dentate, or with 5 spines.  
 Clypeus produced and anteriorly truncate or subarcuate, *with* a short, stout tooth or elevation at the basal lateral angles, near the base of the eyes ..... 4.  
 Clypeus anteriorly not much produced, rounded, *without* a tooth at the basal lateral angles ..... 5.

4. Abdomen fusiform or ovate, not longer than the head and thorax united, the segments constricted at the sutures; segments 2-3, or more, with yellow or yellowish-white spots; first ventral segment with a triangular tooth or elevation near the middle, the sixth *with* a tooth at the apical angle; maxillary palpi 6-jointed; labial palpi 4-jointed. (Australia) ..... *Thynnus*, Fabricius.  
 (Type *T. dentatus*, Fabr.)  
 Abdomen longer than the head and thorax united, the sides nearly parallel, the segments more or less constricted at the sutures, black, immaculate, the first and sixth ventral segments normal, unarmed; maxillary palpi 6-jointed, the joints short; labial palpi 4-jointed. (Australia) ..... *Thynnidea*, Ashm., gen. nov.  
 (Type *Thynnus fumipennis*, Westw.)

5. Metathorax with a median tooth at apex; abdomen longer than the head and thorax united, cylindrical, the sides parallel, the segments constricted at apex, immaculate; maxillary and labial palpi both 4-jointed. (Australia) ..... *Iswaroides*, Ashmead.  
 (Type *I. Koebeliai*, Ashm.)

6. Marginal cell at apex pointed or slightly rounded, but *never* truncate; second cubital cell not triangular ..... 7.  
 Marginal cell at apex truncate; second cubital cell triangular.  
 Clypeus with a median emargination anteriorly; maxillary and labial palpi both 3-jointed. (India) ..... *Iswara*, Westwood.  
 (Type *I. luteus*, Westw.)

7. Hypopygium not narrow, in outline triangular, 3-dentate, the middle tooth large, triangular, projecting far beyond the lateral teeth, which are usually small ..... 8.  
 Hypopygium quite differently shaped, narrower and oblong, as wide or nearly at apex as at base, the sides parallel or nearly, the apex usually briefly tridentate or trilobed, the teeth or lobes equal or nearly, the middle tooth very rarely much longer than the lateral teeth ..... 16.

8. Clypeus produced anteriorly and entirely covering the labrum, or the latter only slightly visible ..... 9.  
 Clypeus not so produced, the disk thickened, convex, the labrum usually large and distinctly visible, rarely partly concealed.  
 Head with a prominence above the insertion of the antennæ and connected with the clypeus by a carina; antennæ of moderate length; fifth ventral segment *with* a tooth at each apical angle; pygidium subtriangular, broader at base than long, and longitudinally striated; maxillary palpi 6-jointed; labial palpi 4-jointed. (Australia) ..... *Zaspilothynnus*, Ashm., gen. nov.  
 (Type *Thynnus Leachiellus*, Westw.)  
 Head anteriorly with two prominences, beneath which are inserted the antennæ; antennæ very long; fifth ventral segment *without* a tooth at the apical angles.  
 (Australia) ..... *Tachynomyia*, Guérin.  
 (Type *Agriomyia spinolæ*, Guér.)

9. Clypeus trapezoidal, truncate anteriorly.  
 Maxillary palpi 6-jointed, the middle joints the longest; labial palpi 4-jointed, the first joint the shortest, *without* a tuft of hairs at apex, joints 2-4 longer, nearly equal in length. (Australia) ..... *Thynnoides*, Guérin.  
 (Type *T. fulvipes*, Guér.)  
 Maxillary palpi 6-jointed, the three last joints very long, much longer and slenderer than the basal joints; labial palpi 4-jointed, the first very long, nearly as long as joints 2-4 united, *with* a tuft of very long hairs at apex. (Australia) ..... *Pseudaelurus*, Ashm., gen. nov.  
 (Type *Aelurus abdominalis*, Guérin.)

10. Clypeus anteriorly truncate or very slightly arcuate, never emarginate; pygidium neither carinate at sides nor truncate at apex ..... 11.  
 Clypeus anteriorly broadly, shallowly semicircularly emarginate, concave or excised; pygidium squarely truncate at apex and usually carinate at sides, the apical lateral angles acute ..... 15.

11. Pygidium at apex rounded, *without* a median incision or emargination ..... 12.  
 Pygidium at apex rounded, but *with* a median incision or emargination.  
 Abdomen fusiform, maculate; hypopygium with the sides strongly rounded or arcuate, and ending in a rather long spine, which is

more than three times as long as thick at base; maxillary palpi 6-jointed; labial palpi 4-jointed.  
 (Australia) ..... *Catocheilus*, Guérin.  
 (Type *C. Klugii*, Guér.)

12. Clypeus produced anteriorly, trapezoidal, the front margin squarely truncate and overlapping the mandibles, the labrum invisible; abdomen not smooth, more or less punctate ..... 13.  
 Clypeus very similar but not so much produced anteriorly, the mandibles wholly exposed, the labrum more or less visible; abdomen smooth, shining, or at most with fine, microscopic lines.  
 Labrum narrowly transverse or arcuate, not bilobed; hypopygium ending in an acute spine, the lateral margins slightly arcuate, the basal angles with usually a slight lobe, but not acute enough to be considered a tooth; mandibles bidentate, the outer tooth the longer and larger; maxillary palpi 6-jointed, the three last joints much slenderer than the preceding joints, the last joint not longer than the penultimate; labial palpi 4-jointed ..... *Myrmecodes*, Latreille.  
 (Type *Tiphia pedestris*, Fab.)  
 Labrum bilobed; hypopygium ending in a spine which curves slightly upwards, the lateral margins almost straight.  
 Maxillary palpi 6-jointed, the last joint longer than the penultimate; labial palpi 4-jointed.  
 (Australia) ..... *Guérinius*, Ashm., gen. nov.  
 (Type *Thynnus flavidabris*, Guér.)

13. First ventral segment *unarmed* ..... 14.  
 First ventral segment *armed* with a prominent median tooth.  
 Head more than twice as wide as thick antero-posteriorly; abdomen maculate; maxillary palpi 6-jointed ..... *Agriomyia*, Guérin.  
 (Type *A. maculata*, Guérin.)

14. Abdomen ovate, maculate, the hypopygium oval, ending in a short spine; maxillary palpi 6-jointed, the three last joints longer than the first three; labial palpi 4-jointed, the joints short ..... *Cephalothynnus*, Ashm., gen. nov.  
 (Type *Thynnus odyneroides*, Westw.)  
 Abdomen fusiform, longer than the head and thorax united, the hypopygium triangularly pointed, the sides only slightly arcuate;

maxillary palpi 6-jointed, the second and the last joint longer than joints 3-5; labial palpi 4-jointed, short ..... *Hemithynnus*, Ashm., gen. nov.  
(Type *Thynnus hyalinatus*, Westw.)

15. Maxillary palpi 6-jointed, long, the joints, except the first, which is very short, long, subequal, the last joint the slenderest and a little the longest; labial palpi 5-jointed. (South America) ..... *Elaphroptera*, Guérin.  
(Type *Myrmecodes dimidiatus*, Hal.)

16. Hypopygium ending in three small, equal or nearly equal, triangular teeth, rarely with the middle tooth much longer than the lateral, or spined ..... 17.  
Hypopygium ending in three small, equal, rounded lobes ..... 19.

17. Clypeus subproduced and anteriorly emarginate, excised or bidentate ..... 18.  
Clypeus produced, trapezoidal, the anterior margin truncate, never emarginate or excised.  
Abdomen elongate, subcylindrical, smooth, shining, spotted with yellow, much longer than the head and thorax united; first joint of flagellum only about half the length of the second; hypopygium at apex 3-spined, the middle spine the longest. (Australia) ..... *Aeolothynnus*, Ashm., gen. nov.  
(Type *A. multiguttatus*, Ashm.)

18. Abdomen oblong-oval or fusiform, longer than the head and thorax united, the segments banded or maculate with white or yellow. (South America) ..... *Pseudelaphroptera*, Ashm., gen. nov.  
(Type *Elaphroptera Spinolæ*, Sauss.)

19. Clypeus broadly, semicircularly emarginate anteriorly, leaving a deep concave space; metathorax with two deep impressions or short furrows at apex; maxillary palpi long, 5-jointed, the first joint short; maxillary palpi 4-jointed; abdomen elongate, narrowed towards base, shining, but microscopically shagreened.  
(South America) ..... *Pycnothynnus*, Ashm., g. nov.  
(Type *Elaphroptera atra*, Guér.)

20. Third cubital cell, along the cubitus, shorter than the second or no longer ..... 21.  
Third cubital cell distinctly longer than the second ..... 22.

21. Clypeus subproduced, with a slight median sinus or incision anteriorly, the labrum well developed; maxillary palpi 5-jointed; labial palpi 4-jointed. (Australia)..... *Anthobosca*, Guérin.  
 (Type *A. Australasiæ*, Guér.)

22. Mandibles narrower, curved, the teeth acute; abdomen oblong, fusiform or subcylindrical, as long or longer than the head and thorax united..... 23.

Mandibles broad, the apical tooth large, obtuse, the inner tooth with a long cutting face; abdomen oval, hardly as long as the thorax or no longer.  
 Head about twice as wide as thick antero-posteriorly, not wider than the thorax; pronotum short, transverse; mesonotum fully as wide as long, with two furrows; metathorax short, rounded behind..... *Amblysona*, Westw.  
 (Type *A. Latreillei*, Westw.)

23. First transverse cubitus *with* an appendage..... 24.  
 First transverse cubitus *without* an appendage.  
 Abdomen long, cylindrical, the first segment much longer than wide at apex, petioliform. (South America)..... *Klugianus*, Ashm., gen. nov.  
 (Type *Thynnus haematodes*, Klug.)

24. Clypeus produced and anteriorly broadly truncate, trapezoidal..... 25.  
 Clypeus anteriorly not broadly truncate, slightly rounded, subemarginate, deeply triangularly emarginate, or bidentate..... 26.

25. Clypeus *with* a median carina; maxillary palpi 6-jointed, slender; labial palpi 4-jointed; abdomen maculate or fasciate with yellow. (Australia)..... *Zeleboria*, Saussure.  
 (Type *Thynnus carinatus*, Smith.)

Clypeus *without* a median carina; maxillary palpi 6-jointed, not slender; labial palpi 4-jointed; abdomen with white spots, the hypopygium near the tip with a pointed and a clavate appendage of hairs..... *Psammothynnus*, Ashm., gen. nov.  
 (Type *Thynnus depressus*, Westw.)

26. Hypopygium *not* prominently projecting, always obtuse or truncate at apex..... 27.  
 Hypopygium much narrowed, narrowly rounded at apex, and prominently projecting beyond the tip of the abdomen.

Clypeus anteriorly subtriangularly emarginate or tridentate; maxillary palpi 6-jointed, the first joint short, the following joints longer, subequal; labial palpi 4-jointed, the first joint shorter than the 2nd and 3rd united; abdomen spotted. (South America) .... *Spilothynnus*, Ashm., gen. nov.  
(Type *Thynnus laetus*, Klug.)

27. Clypeus anteriorly subemarginate, deeply emarginate or tridentate ..... 28.  
Clypeus anteriorly rounded, not emarginate.  
Abdomen fusiform, a little longer than the head and thorax united, maculate or fasciate; maxillary palpi 6-jointed, the last three joints much longer than the first three, or twice as long; labial palpi 4-jointed, joints 1 and 4 longer and slender than 2 and 3, which are short, stout. (South America) .... *Anodontyra*, Westwood.  
(Type *A. tricolor*, Westw.)

28. Clypeus anteriorly subemarginate; maxillary palpi 6-jointed, joints 1-3 rather short, joints 4-6 long, subequal, five or six times longer than thick; labial palpi 4-jointed, the first joint long and slender, about as long as 2-4 united; abdomen fasciate. (South America)  
Clypeus anteriorly bidentate; maxillary palpi 6-jointed, the joints obconical, unequal, the first four short, the third and fourth much longer than the second. (South America) .... *Ornepetes*, Guérin.  
(Type *O. nigriceps*, Guér.)

29. Pygidium not very narrow, oblong, rounded at apex, usually shagreened, punctate, rugulose or striate; if smooth, which is rare, it is curiously modified, compressed towards base and broadened into an elevation posteriorly; basal segment of abdomen *without* a strongly curved furrow on each side or a strong transverse furrow before the apex. 30.  
Pygidium very narrow, smooth and shining; basal abdominal segment *with* a strongly curved furrow on each side, or a deep, transverse furrow before apex.  
Basal abdominal segment with a strongly curved furrow on each side; second segment with about three transverse folds or carinæ; pygidium with two pencils of long golden hairs that curve and meet above the narrow elevation on its disk. .... *Thynnus*, Fabricius.  
Basal abdominal segment with a strong transverse furrow just before apex; second segment with three transverse folds or

carinæ ; pygidium long, lanceolate, broadest at apex, without the two pencils of golden hairs..... *Thynnidea*, Ashm.

30. Head seen from above *not* triangular, usually transverse, subquadrate or obtrapezoidal..... 31.

Head seen from above triangular.

Eyes small, oval, extending to base of mandibles ; clypeus very short, truncate ; mandibles falcate, pointed at apex ; maxillary palpi 4-jointed ; labial palpi 3-jointed ; second segment of abdomen with two transverse folds or carinae towards apex..... *Iswaroides*, Ashmead.

31. Pronotum *not* quadrate, obtrapezoidal, or wider in front than behind.. 33.

Pronotum quadrate, usually, however, a little wider than long, but not wider in front than behind.

Head not or scarcely wider than the thorax, the latter not especially narrow..... 32.

Head much wider than the thorax, the latter being very narrow, with the sides parallel ; dorsal abdominal segments 1 and 2 strongly transversely furrowed ; pygidium oval or nearly and longitudinally striate..... *Catocheilus*, Guérin.

32. Clypeus slightly produced, truncate anteriorly, the labrum visible as a narrow transverse line, ciliate ; mandibles narrow, acute at apex ; maxillary palpi 6-jointed, not short ; labial palpi 4-jointed. (Australia) .. *Entelus*, Westwood.  
(Type *E. bicolor*, Westw.)

Clypeus short, broadly truncate anteriorly, but the labrum not visible ; mandibles falcate, rounded at apex ; maxillary and labial palpi both 4-jointed ; first abdominal segment with a broad, finely shagreened depression at apex, the second segment with two transverse carinae, the intermedian space between the carinae shagreened, opaque ; pygidium narrowly compressed towards apex and then abruptly dilated or trumpet-shaped..... *Spilothynnus*, Ashm.

33. Head large, obtrapezoidal, subquadrate or subglobose, the temples or the space back of the eyes very broad, *without* furrows or impressions extending from the antennæ to the vertex..... 34.

Head transverse, much wider than thick antero-posteriorly, the temples not especially broad, *with* sometimes two furrows or impressions extending from antennæ to vertex..... 41.

34. Head subquadrate or subglobose ..... 35.  
 Head large, trapezoidal, the temples abnormally broad.  
 Abdomen oblong oval, the second dorsal segment with three or  
 four transverse folds or carinæ; pygidium long oval, longitudinally striate; labrum longly ciliated; maxillary palpi minute, 2-jointed; labial palpi 4-jointed, the last joint as long as joints  
 1-3 united. (Australia). ..... *Cephalothynnus*, Ashm.

35. Head subquadrate or subglobose, the hind angles rounded, the temples about four times the width of the eye ..... 36.  
 Head almost quadrate, only a little wider than long, the temples only about twice the width of the eye.  
 Abdomen large, oblong-oval, the second dorsal segment with about five transverse carinæ; pygidium long, ellipsoid, very slightly narrowed at the middle and longitudinally striate; labrum hardly visible, ciliate; maxillary palpi minute, 2-jointed; labial palpi short, 3-jointed, the second joint the longest and thickest. .... (?) *Thynnidea*, Ashm.

36. Metathorax with the disk of the oblique truncation flat but not concave ..... 37.  
 Metathorax with the disk of the oblique truncation concave or sub-concave.  
 Abdomen large, oblong-oval, the second dorsal segment coarsely rugulose, with two transverse folds or carinæ at apex; pygidium longitudinally rugulose ..... *Elaphroptera*, Guérin.

37. Metathorax *without* a hump-like elevation at base just behind the scutellum ..... 38.  
 Metathorax *with* a hump-like elevation at base just behind the scutellum.  
 Second abdominal segment with a transverse fold or carina near base and another near apex, the intermediate space very coarsely rugulose; pygidium oblong-oval, finely, longitudinally aciculated towards apex ..... *Pycnothynnus*, Ashm.

38. Metathorax obliquely truncate from the base, *without* a distinct metanotum ..... 39.  
 Metathorax *with* a short but distinct metanotum, trapezoidal, the truncation abrupt, perpendicular; abdomen with a depression near apex and a delicate transverse carina just before apex; the depression finely coriaceous; second segment with a depression

from the middle which is rugulose ; pygidium oblong-oval, rugulose towards base ; mandibles with a sinus before apex, appearing bidentate ..... *Anodontyra*, Westwood.

39. Clypeus *without* a trace of a median carina, the anterior margin truncate ..... " ..... 40.

Clypeus *with* a more or less distinct median carina, the anterior margin subangularly produced.

Pygidium oblong-oval, longitudinally striate, and with a lobe or tooth on each side before the apex ; first abdominal segment with traces of transverse carina or elevated lines at apex, the second segment with many transverse folds or carinæ, 17 or more ; metathorax sloping from its base ..... *Myrmecodes*, Latreille (*partim*).

40. Pygidium oblong, with a more or less elongate, lanceolate elevation on its disk gradually broadened posteriorly, the elevation with some longitudinal lines towards base, smooth at apex ; first abdominal segment with a depression at apex, the second segment with five transverse folds or carinæ, metathorax sloping from a little beyond its base, leaving a short but distinct metanotum ..... *Thynnoides*, Guérin.

41. Pygidium very narrow, or strongly compressed towards base, with an elevation towards apex ..... 42.

Pygidium neither very narrow nor compressed towards base, without an elevation or disk, above flat or subconvex, striate, punctate or rugulose ..... 45.

42. Head about twice as wide as thick antero-posteriorly, or three times as wide as thick when viewed from above.

Second dorsal abdominal segment with three or more transverse folds or carinæ ..... 43.

Second dorsal segment with only *one* transverse carina just before apex, the anteriorly portion rudely punctate ..... *Psammothynnus*, Ashm., gen. nov.

43. Second abdominal segment with *many* transverse folds or carinæ ..... 44.

Second abdominal segment with three transverse folds or carinæ.

Pygidium elongate, smooth, the hypopygium with two converging carinæ at base ..... *Zelaboria*, Saussure.  
(Type *Thynnus carinatus*, Smith.)

44. Second abdominal segment with 20 or more transverse carinæ, the first segment with a transverse furrow just before apex, the third and

following segments smooth ; head with a concave depression above each antenna that extends to the vertex ; pygidium strongly compressed at the middle, and then broadened into an oval plate, the basal portion, which is separated from the oval apical portion by the strongly compressed portion, is transversely striated, while the apical portion is smooth..... *Zaspilothynnus*, Ashm.

Second abdominal segment with about 13 or 14 transverse carinae, the first segment with many oblique striae at the sides towards apex, the following segments after the second shining but microscopically shagreened, with a few scattered feeble punctures, especially noticeable on apex of the two last segments ; pygidium compressed basally, dilated apically, but with an emargination on each side at apex, smooth and *without* transverse striae at base ..... *Tachynomyia*, Guérin.

45. Clypeus *without* a median ridge ..... 46.  
Clypeus *with* a median ridge.

Pygidium not very narrow, deflexed apically, longitudinally striated, and with a tooth or lobe at each side towards the base ; mandibles broad and flat, obtuse at apex, with a longitudinal grooved line along the inner margin and another along the outer margin for a little more than half their length ..... *Myrmecodes* Latreille.  
(Type *Tiphia pedestris*, Fabr.)

46. Head *without* convex impressions extending from the antennæ to vertex, subopaque ; clypeus transversely narrowed, with a slight median tooth anteriorly ; mandibles long, falcate ; second dorsal abdominal segment with a transverse carina near base and another near apex, the intermediate space multistriated transversely ; pygidium oblong-oval, longitudinally striated with a notch on each side before apex ; maxillary palpi 3-jointed ; labial palpi 4-jointed ..... *Hemithynnus*, Ashmead.

Head *with* two convex impressions extending from the antennæ to the apex ; clypeus transversely narrowed, with a slight median sinus anteriorly ; mandibles, falcate, acute ; pygidium strongly compressed at sides just before the apex, then dilated, and as seen from behind appearing as an oval elevation more or less transversely aciculated, rarely smooth ..... *Agriomyia*, Guérin.

## A FEW LAST WORDS TO DR. WASMANN.

BY THOS. L. CASEY, ST. LOUIS, MO.

I have read with some interest Dr. Wasmann's "Last Reply" in the March number of this journal (page 74), and hasten to say that I was by no means "angry" when I wrote the answer referred to. I was only pained to think that a man of Dr. Wasmann's eminence in the scientific world would stoop to send to a colleague a specimen without marks of any kind for identification, in order to have him commit himself to an opinion when deprived of the subtle influence of at least a locality label.

I feel sure that upon reflection Dr. Wasmann will not hold me responsible for his failure to glance over the matter referred to in my paper, which, the heading stated, comprised other studies besides the revision of *Corylophidae*, etc., or for my being at a loss to understand the correspondence in the light of current events.

I did not send Dr. Wasmann a copy of my reply, because, as he had used this journal as a vehicle of publication, I supposed that he was accustomed to reading it regularly. Not a single copy of my "extras" has been sent out to anyone, it seeming preferable to me that the article in question should be known only within the sphere of circulation of the journal in which his original article and my reply appeared. Dr. Wasmann has evidently misinterpreted the motive of my failure to send him a copy, and I therefore make this explanation.

If I went too far in misconstruing Dr. Wasmann's actions in this matter, which is not very momentous from any point of view, it will give me pleasure to retract whatever may have wronged him. Our entomological friends have the full history of the issue, and can form their own conclusion.

## A PRESENT TO THE SOCIETY.

The Entomological Society of Ontario has been kindly remembered by Messrs. J. and H. Comstock, Evanston, Ill., in a contribution to its collection of a number of butterflies taken by themselves in a trip through Colorado during the season of 1902. Carefully done up in papers, named and dated, with the localities in which they were taken, these specimens are of special interest as representing much-discussed forms of that famous locality, which hitherto have been known to us only by name.

J. ALSTON MOFFAT, Curator.

NOTE ON *DEILEPHILA GALII*, ROTT.

Mr. Percy B. Gregson, of Blackfalds, Alta., sends a painting, made by Mr. F. C. Clare, of Edmonton, of the larva of *Deilephila galii*, Rottemburg. Mr. Gregson writes that these large larvæ are a luscious treat for prairie chickens in early autumn, and are quite often found entire, although, of course, dead, in their crops. These larvæ in the Northwest feed on the Giant Willowherb [*Chamænerion angustifolium* (L.), Scop.], and it was from this food-plant that its more generally-known name of *Chamænerii* was derived. I have read that these larvæ are also eaten regularly by some tribes of Indians in California. Some years ago I examined the contents of the crops of four prairie chickens from Western Manitoba, and found them stuffed with the hips of the prairie rose, the leaves of the alkali-loving Ranunculus [*Oxygraphis cymbalaria* (Pursh) Prantl.], and many specimens of *Chrysomela lunata*, Fab. The specific name of the insect under discussion is, I presume, merely the genitive case of *Galium*, the botanical name of the Bedstraw, one of the food-plants of the larva. If this is the case, the usual spelling with the letter *l* doubled is a mistake, notwithstanding that it appears so spelled in most lists. Although properly spelled in the index of Dr. Dyar's new list, it is in the inaccurate form in the body of the work. I merely mention the matter, because I find that the mistake, if it is one, occurs both in European and American lists.—J. FLETCHER.

## NOTE ON NORTH AMERICAN ATTACI.

BY A. RADCLIFFE GROTE, HILDESHEIM, GERMANY.

I repeat here, for the benefit of American readers, the descriptions of two abberations, given by me originally in the pages of the *Insekten Börse*, 1902.

*Samia Californica*, ab. *parvimacula*.—The male specimen is of a lighter red than usual, and the lunate discal spots are so reduced on all four wings as to appear half the usual size. They are, in fact, narrow, and only about 5 mm. in length, squarish in form. The antennæ are greatly reduced, the usual length being about 20 mm., while here they are only about 14 to 15 mm., and the pectinations appear to be proportionately reduced. The expanse is normal, about 95 mm., but at first sight the specimen suggests a different species.

I may mention here a female, *S. Californica*, which has the right secondary smaller and of a peculiar translucent appearance, suggesting an

instance of retarded development. It has been elsewhere shown, in a similar case, that the undeveloped wings present resemblances to the pupal condition.

*Telea polyphemus*, ab. *flava*.—The colour of the female specimen is of a rather bright ochre yellow. The darker inner shading to the subterminal band on primaries is wanting and this outer band itself is white. The eye-spots are as usual and thus quite different from the Western form *oculea*, Neum. In colour, *Telea* varies from roseate to olive ochre. I have seen a second specimen of this yellow aberration in a private collection.

In the proceedings of the Am. Phil. Soc., Vol. xli., No. 171, I have illustrated an instance of the spinning of a silken attachment around the stem of the enveloping leaf in the cocoon of *Telea*, reminding us of the habit of *Philosamia cynthia*, or, even perhaps of *Antherea mylitta*. I have since found three more examples of this hitherto unnoticed habit, among a lot of cocoons of *Telea*, but the false stem in these instances does not seem to have been fastened to the branch. It is difficult, however, from collected material to be quite certain of the fact, and it would be interesting if American collectors would observe closely the spinning methods of *Telea*. The silken attachment looks like that of *Callosamia promethea*, but entirely encloses the stem of the leaf.

#### ERRATA.

March No., page 75, for ARATUS read ARADUS.

In the Thirty-third Annual Report (1902), page 24, line 13 from the top, for "triangle" read tangle.

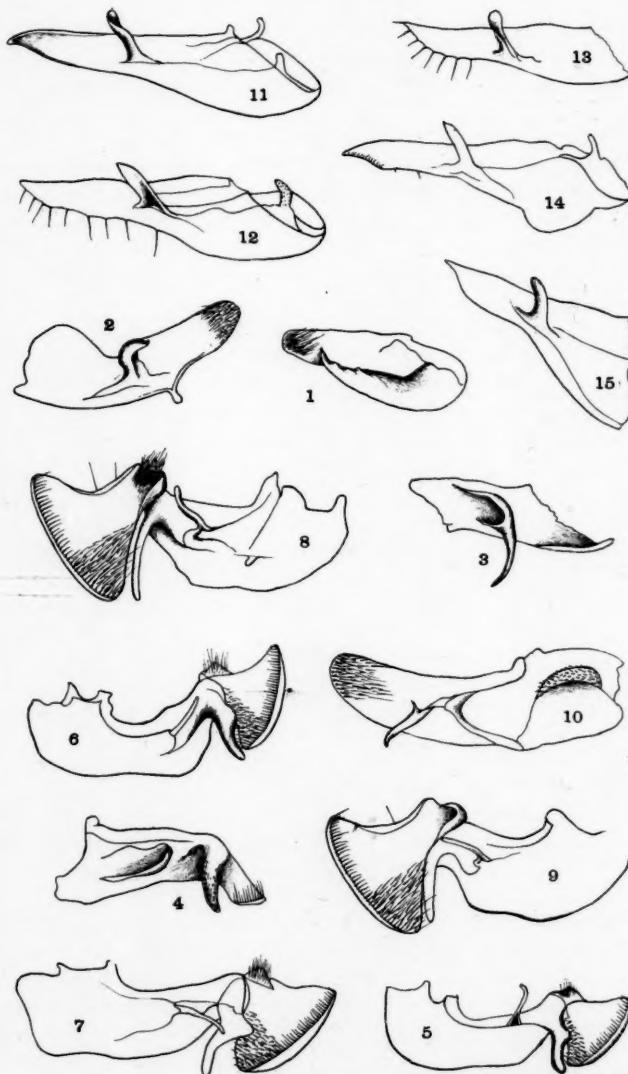
Page 28, line 15 from the bottom, for "point" read joint.

Page 60, line 3, after "C. 12-punctatus," read "which has only recently been reported as having invaded Canada, has reached London, which would seem to indicate that it will soon prove itself to be the more abundant and destructive species of the two."

The 33rd Annual Report (1902) of the Society has been published, and is sent by the Ontario Department of Agriculture to the members whose subscriptions are paid up for the year 1903, and to those only. Any subscriber who has not yet received a copy will understand the reason why.

Mailed April 1st, 1903.





NEW NOCTUIDS — FIGURES OF GENITALIA.

